Lafayette College | Electrical and Computer Engineering

COOLING SYSTEM

Interconnectivity Document

ECE 492 2017

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# Overview

The purpose of this document is to provide wiring and interconnect information about the COOLING SYSTEM Controller box. This document specifically regards the interconnect information for the components within the COOLING SYSTEM Controller box. A separate ICD can be found for how the COOLING SYSTEM Controller box connects with its external components. All of the images included below are provided in .pdf and original form in the zip folder located here:

For information about GLV and these subsystems, see the User Manual and Maintenance Manual, both of which can be accessed here: https://sites.lafayette.edu/ece492-sp17/subsystems/cooling-system/

# Cooling System ICD Overview

The image below shows a full wiring diagram of all the components within the COOLING Controller box. Below is also a corresponding wire lists, listing wire number, A/B connections and voltage for each of the wires.



Figure : COOLING CONTROLER Box Internal Connections

|  |  |  |  |
| --- | --- | --- | --- |
| **Wire Number** | **Conn A** | **Conn B** | **Voltage** |
| 1 | FAN1 PWM | 10K Resistor | N/A |
| 2 | FAN1 PWM | DIGITAL 11 | N/A |
| 3 | 10K Resistor  | Arduino 5V | 5V |
| 4 | FAN1 Tachometer | 10K Resistor | N/A |
| 5 | FAN1 Tachometer | DIGITAL 5 | N/A |
| 6 | 10K Resistor | Arduino 5V | 5V |
| 7 | FAN2 Tachometer | 10K Resistor | N/A |
| 8 | FAN2 Tachometer | DIGITAL 2 | N/A |
| 9 | 10K Resistor | Arduino 5V | 5V |
| 10 | FAN2 PWM | DIGITAL 6 | N/A |
| 11 | FAN2 PWM | 10K Resistor | N/A |
| 12 | 10K Resistor | Arduino 5V | 5V |
| 13 | FAN1 Power | 12V | 12V |
| 14 | FAN2 Power | 12V | 12V |
| 15 | FAN1 GND | GND | GND |
| 16 | FAN2 GND | GND | GND |
| 17 | TEMP SENSOR1 PIN1 | Arduino 5V | 5V |
| 18 | TEMP SENSOR2 PIN1 | Arduino 5V | 5V |
| 19 | TEMP SENSOR3 PIN1 | Arduino 5V | 5V |
| 20 | FLOW METER PIN1 | Arduino 5V | 5V |
| 21 | TEMP SENSOR1 PIN2 | 10K Resistor | N/A |
| 22 | TEMP SENSOR2 PIN2 | 10K Resistor | N/A |
| 23 | TEMP SENSOR3 PIN2 | 10K Resistor | N/A |
| 24 | FLOW METER PIN2 | 10K Resistor | N/A |
| 25 | TEMP SENSOR1 PIN2 | A0 | N/A |
| 26 | TEMP SENSOR2 PIN2 | A1 | N/A |
| 27 | TEMP SENSOR3 PIN2 | A2 | N/A |
| 28 | FLOW METER PIN2 | A3 | N/A |
| 29 | LCD TX | RX | N/A |
| 30 | LCD + | LCD + on Arduino | N/A |
| 31 | LCD - | LCD - on Arduino | N/A |
| 32 | PB1 GND | DIGITAL 9 | N/A |
| 33 | PB2 GND | DIGITAL 10 | N/A |
| 34 | PB1 GND | 10K Resistor | N/A |
| 35 | PB2 GND | 10K Resistor | N/A  |
| 36 | 10K Resistor | GND | GND |
| 37 | 10K Resistor | GND | GND |
| 38 | PB1 POWER | Arduino 5V | 5V |
| 39 | PB2 POWER | Arduino 5V | 5V |
| 40 | MODE SWICH GND | DIGITAL 12 | N/A |
| 41 | MODE SWICH GND | 10K Resistor | N/A |
| 42 | 10K Resistor | GND | GND |
| 43 | MODE SWICH POWER | Arduino 5V | 5V |
| 44 | RELAY1 PIN1 | 24V | 24V |
| 45 | RELAY1 PIN2 | PUMP POWER | N/A |
| 46 | RELAY1 PIN3 | 12V | 12V |
| 47 | RELAY1 POWER | Arduino 5V | 5V  |
| 48 | RELAY1 GND | GND |  GND |
| 49 | RELAY1 S | DIGITAL 8 | N/A |
| 50 | PUMP GND | GND | GND |
| 51 | RELAY2 PIN1 | SAFETY LOOP1 IN | N/A |
| 52 | RELAY2 PIN2 | SAFETY LOOP1 OUT | N/A |
| 53 | RELAY2 GND | GND | GND |
| 54 | RELAY2 POWER | Arduino 5V | 5V |
| 55 | RELAY2 S | DIGITAL 4 | N/A |
| 56 | J1 | J5 | N/A |
|  |  |  |  |
| 57 | J1 | J5 | N/A |
| 58 | J1 | J5 | N/A |
| 59 | J4 | 24V | N/A |
| 60 | 24V | DC TO DC CONVERTOR | 24V |
| 61 | DC TO DC CONVERTOR | 12V | 12V |
| 62 | DC TO DC CONVERTOR | GND | GND |
| 63 | DC TO DC CONVERTOR | GND | GND |
| 64 | J4 | J2 | N/A |
| 65 | J4 | J2 | N/A |
| 66 | CAN BUS SHILED | J2 | N/A |
| 67 | CAN BUS SHILED | J2 | N/A |